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Internet Addiction Disorder (IAD) as a Consequence of the Expansion of Information Technologies

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Abstract: Internet addiction disorder (IAD) is a global topic that increasingly attracts the attention of the wider public. The purpose of this paper is to research the current situation in the prevalence of both Internet addiction and problematic Internet use, which is the most common precursor to developing psychological disorders related to the relationship to the Internet and its elements. The initial hypotheses of this paper are that the Internet addiction disorder is more widespread and harmful than can be deduced from the attitude of society and health authorities towards it and that it calls for renewed theoretical and empirical research, which is the attitude shared by the scientific community. The results that we stated in the paper clearly show numerous mental and physical deficiencies and problems that are experimentally proven and presented in the paper. As a recommendation, we would point to increasing awareness of the dangers of excessive and problematic use of the Internet, offering healthy alternatives, promoting the culture of safe use of the Internet, as well as educating individuals on other self-control mechanisms. Attention should be constantly paid to dangers that realistically exist, and it should be permanently worked on this aspect of mental health of individuals, nations, and the global society.

Keywords: Internet addiction disorder, digital violence, the Internet, information technologies, digital expansion.

Introduction

In recent decades, the Internet has become an integral part of the lives of most of the world's inhabitants. Today, every active person has the hardware that allows a permanent connection to the world wide web where they can communicate or work, educate or entertain themselves, or simply search for the necessary information. The Internet is inseparable from contemporary man in the contemporary world. "The Internet is of great benefit to humanity as an inexhaustible source of information, an affordable way to acquire skills and knowledge, as an indispensable assistant in work and business, as a means of spending and planning free time, as a meeting place and a way to be and stay in touch with whoever they want. The Internet makes it easier to choose and buy the necessary goods and services and allows one to save on their purchases" (Kont, 2017). The emergence and widespread use of the Internet has opened up a whole range of new degrees of freedom that did not exist before: now, having overcome space and time, it turns into an important participant in various processes, from observing events taking place thousands of kilometers from its location, to expressing indignation to unfamiliar participants in the interaction (Bovina and Dvoryanchikov, 2020a).

In other words, the fourth industrial revolution promoted the Internet and ICT and their necessary use in the way of life of the inhabitants of the planet. Media literacy and media competence represent important features in the process of self-realization of an individual in the modern media society. However, when defining the dimensions of the media competencies of the teaching staff, it is necessary to take into account the accelerated scientific and technological development, as well as the specific individual and social needs associated with it (Maksimović, Osmanović and Mamutović, 2020). The application of ICT itself is gaining momentum in the educational process. The development and application of new technologies are growing as a measure of whether teachers are trained for their advantages and

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disadvantages. The application of ICT in education has become an integral part of the teaching and learning process. Full implementation of information technology requires fundamental changes in the informatical sphere of teacher education, and teachers' acquisition of digital competencies becomes the precondition for successful execution of educational tasks (Maksimović and Dimić, 2016). Their multifunctional manifestations reveal a whole hierarchy of codes that function in a singular and public consciousness as one. However, relevant questions remain: "Do teachers have the ability to use educational technology and are the school sufficiently equipped with all modern technical means?" (Stošić and Stošić, 2015; Stošić, 2015). The results of one research show that teachers are trained to use innovations in teaching but are not sufficiently trained to implement the Internet in the classroom (Stošić, 2015).

However, just as "yin" has "yang", just as good has evil, so does the light, at times the bright side of the Internet has its dark opposite, sometimes difficult and destructive state of addiction with numerous harmful manifestations and implications. Internet addiction has been declared a serious disease in some places and put in line with the already known destructive types of addiction, addiction to the use of tobacco, alcohol, opiates, and gambling. New times and accelerated scientific and technological development, especially in digital engineering, have led the scientific community to question the impact of addiction to virtual products such as film, television and video games on the mental and physical health of not only users but of society as a whole. The fundamental difference in relation to the classic forms of addiction (drugs, alcoholism, tobacco) is reflected in the fact that in the case of addiction to virtual contents, we do not take any ingredients into the body, by using technical means we achieve a certain degree of satisfaction and excitement that triggers biochemical mechanisms in the brain like those when chemicals are introduced into the body. This type of addiction does not create a physiological dependence, as with the use of drugs, tobacco, or alcohol, but only a psychological one, although we should pay attention to scientific views that prove that every psycho-stimulation ends in chemical reactions in the brain.

From the second half of the 1990s until today, researchers have been examining the influence of the Internet on social relations, life habits, and the personality of users. New communication technologies open up the widest possibilities for the individual to construct and manage an identity, to present it as they wish (Дворянчиков и Бовина, 2022, 54). The Internet is presented as important for strengthening existing stable social ties, strengthening social activities, identity formation, personality development, and the like. On the other hand, the Internet is blamed for developing superficial, weak relationships with acquaintances (instead of the previously nurtured stable, strong ties with relatives, and friends), social isolation, loneliness, depression, criminal behavior, and more (Kovačević-Lepojević, 2011). Many studies have analyzed demographic, socioeconomic, and other habits as reasons for early Internet addiction, emphasizing the importance of a multidisciplinary approach in the treatment of Internet addiction, and some studies study the predisposing factors for the emergence of Internet addiction (Dimitrijević, 2007). The goal of this paper is to investigate the current situation in terms of the prevalence of both Internet addiction and problematic use of the Internet, which is the most common precursor to the creation of psychological disorders related to the Internet and its elements. The data that we will present in this paper is the result of the empirical research of the author, about which we will write in more detail later. The initial hypotheses of this paper are that the disorder of Internet addiction is more widespread and harmful than can be deduced from the attitude of society and health authorities towards it, and that it deserves repeated theoretical and empirical research, which is the position shared by the scientific community, as evidenced by numerous studies, the oldest of which we will present in this paper from 2000, and that the approach to this problem must be multidisciplinary because the manifestations of this problem are multiple and diverse - from problematic Internet use in general, through problematic the use of social media, online video games, all the way to the manifestation of various paraphilias and other forms of deviant and destructive behavior that have just found a new, unlimited polygon on the Internet with numerous benefits for antisocial and antisocial behavior.

Correlation of expansion of information technologies and the IAD

The term "internet addiction" was first used by American psychiatrist Ivan Goldberg in 1995 (Basu and Dalal, 2016). The term very quickly became generally accepted and introduced into psychiatric practice, although there were objections that Goldberg introduced it into science as a kind of assumption or even a joke. Gradually, more scientists became involved in researching the phenomenon of problematic Internet use and its implications, despite never reaching a scientific consensus whether it can be classified as an addiction disorder. If so, then why is Internet addiction a problem for man and society? Psychologists have been warning about the dangers for years and comparing the phenomenon of Internet addiction with the hitherto dominant forms of addiction to gambling, alcohol, and drugs. Ongoing research on Internet addiction shows that "long and uncontrolled stays in the network cause changes in

the state of consciousness and functioning of the brain. Gradually, this leads to a loss of learning ability and deep thinking" (Kont, 2017). Nicolas Carr, an American scientist and publicist, an expert in the field of management and transmission of information, came, together with a group of psychologists, to the indicative conclusion (Carr, 2010), that regular multi-hour stay on the Internet leads to the human brain eventually losing the ability to think deeply, turning regular network users into people who may have a problem with concentration and the ability to do deep intellectual work (Carr, 2010).

The scientific community believes that disruption of thought processes and memory impairment is not the only negative effect of the Internet on humans. By staying in the virtual world for a long time, a person gradually loses the skills necessary for normal, real communication with people, which often leads to a certain alienation and asocial disorder. Instead of social life, people start texting, liking attitudes on social media statuses, chatting on Skype, and sending e-mails, instead of buying goods in regular stores, buying by ordering them through specialized services without leaving home.

The problem of Internet dependence threatens to turn all the benefits offered by the Internet, which are rightly classified as fundamental values of civilization, into a problem with their long-term and non-selective abuse. Thus, difficulties in communicating with new people begin to appear, and entering an unknown society for an Internet addict becomes a stressful situation. A person shuts himself in, which affects work or study, and has problems sleeping and eating. Some unhealthy attachments to information technology even led to suicide (Kont, 2017).

If steps are not taken to bring Internet addiction under some control, the progress of addiction can cause disruption of family relationships with broader socio-psychological implications. Internet addiction could become a problem in modern society.

Although the warnings of scientists and the professional public seem too dystopian, this may not be the case. The Center for Technological Management of the Faculty of Organizational Sciences in Belgrade, referring to the World Economic Forum, reported that by 2025 it is expected that (Ukropina, 2019):

- With a probability of 91.2%, ten (10) percent of the world's population will wear clothes with an internet connection;
- With a probability of 91%, ninety (90) percent of the world's population will have unlimited and free internet access;
- With a probability of 84.1%, the first car will be produced using a 3D printer;
- With a probability of 81.7%, the first smartphone that can be implanted in the human body will be available for purchase;
- With a probability of 84.4%, 80% of the world's population will have a digital presence on social media.

At the center and essence of the problem is the Manichean nature of man and all things and phenomena on Earth, which, as we have already stated, makes the Internet get its negative sides, and that, in addition to immeasurable benefits can cause enormous damage (Bjelajac and Filipović, 2020). Potential negative things in the case of the Internet are exacerbated by the fact that it is still a young technology, although generations have already arrived for whom the Internet has been an integral part of their entire lives. In previous technological inventions that changed the way society functioned, new inventions reached users who were not prepared or ready for them relatively slowly. But in this case, with the combined rapid development of nanotechnology and consequently various other branches of the information and communication hardware and software industry, the possibility of unlimited Internet use has reached the hands of people who did not originally intend to use the Internet when buying, say, a mobile phone. The novelty and innovation of the Internet have led to the spread of cybercrime, which has found very fertile ground on the Internet, full of users who approach the Internet, and everything on it, in a confusingly naive way. Cybercrime is a big problem for countries and businesses, so in 2001 the European Commission adopted the European Convention on Cybercrime, which recognizes four basic forms of crime that are categorized as cybercrime: actions against the confidentiality, integrity, and availability of computer data and systems; hardware-related activities - where counterfeiting and theft are most common; content-related activities - mostly child pornography; and actions related to copyright and intellectual property infringement (Bjelajac and Filipović, 2019). A question that may be of interest to researchers of both the human psyche and security culture is why people have a far greater degree of trust in content and people they know and meet online than in the same real-world situations. More broadly, it is precisely in this specific relationship with digital online content that the elements that are factors in the genesis of digital addiction are found.

IT development as a risk factor for the development of the IAD

Although there are opinions (Wallace, 2015) that the Internet itself is an aggressively addictive environment, the prevailing opinion in science is that the Internet itself is a neutral environment that a priori does not provoke addiction (Young, 1998). However, the Internet has specific properties that, in the case of users, provoke inappropriate behavior on the Internet. In this regard, Kimberly Young draws attention to the characteristics of cyberspace such as anonymity, usability (convenience), and escapism (Young, 1998). "Among the specific characteristics of cyberspace that make the Internet desirable for use, researchers state easy availability, security, ease of use, the ability to maintain control over their own actions and the consequences of decisions, the ability to experience strong emotions from the results of their own actions. Continuity of the Internet (24 hours a day, non-stop mode), stimulating role contained in a huge amount of information and their intensity, the possibility of disinhibition and increase of intimacy are important for creating Internet addiction" (Greenfield and Sutker, 1999).

When we talk about risk factors that can determine a person's propensity to become more or less addicted in cases of equal exposure to the agent, we are talking about two types of risks: biological risks and risks to family and family relationships (Малыгин et al., 2011).

General biological risk factors include prenatal, perinatal, and postnatal hazards that contribute to the development of organic inferiority of brain structures (Малыгин et al., 2011). "Hereditary factors are also important for the development of addiction as a basis for the formation of temperament and charactero-logical personality traits. The fact is that the organic inferiority of the central nervous system can be the basis of infantilism, emotional-volitional instability, and personal aggression, it contributes to the formation of the risk of addictive behavior" (Малыгин et al., 2011). The burden of hereditary factors, especially in the field of mental disorders, also carries additional risk factors. In numerous studies on behavioral addictions, special importance is given to various cerebral diseases, brain injuries and other damage to the central nervous system as factors that contribute to the weakening of inhibitory processes with the development of hyperexcitability and rigidity of mental processes. A neuropsychological study of adolescents addicted to the Internet revealed diffuse disorders of regulatory functions, which reflects the functional weakness of the frontal lobes, which is manifested by difficulties in mastering motor programs; the inertia of mental processes, disorders in the dynamics of the flow of intellectual activity (Малыгин et al., 2011).

Attention Deficit Hyperactivity Disorder (ADHD) is one of the most common disorders of the central nervous system. One study (Yoo et al., 2004), in which 535 students participated (mean age 11.1 years), found that "students diagnosed with Internet addiction had significantly higher rates of inattention, hyperactivity, and impulsive behavior (as reported by parents and teachers) compared to the group in which no signs of Internet addiction were identified. Lack of self-control can cause adolescents to have difficulty controlling Internet use. As a result, it was concluded that they are at a higher risk of developing dependence on computers, which increases with the interaction of their weaknesses with the peculiarities of working on the Internet".

Due to the influence of family factors on the formation of Internet addiction, a relatively small number of papers have been dedicated. It was found that the low level of family functioning positively corrects with Internet addiction in adolescence (Петракова, 1995), as well as surfactant addiction (Hops et al., 1990). It has been found that in families with a high number of conflicts there is a reduced level of child-parent interaction, leading to child alienation and reduced parental control, which is often a predisposing factor for adolescent Internet addiction (Arv et al., 1999; see also Петракова, 1995).

Problematic Internet use or pathological Internet use is generally defined as problematic, compulsive Internet use, which leads to significant impairment of an individual's function in various life domains over a long period of time. Young people are particularly at risk of developing Internet addiction disorders (Tomczyk and Solecki, 2019; Tomczyk et al., 2021; Tomczyk, Szyszka and Stošić, 2020), with case studies highlighting students whose academic success declines as they spend more and more time online. Some also suffer health consequences due to sleep loss (Tereshchenko et al., 2021), because they stay awake later and later to chat online, check status updates on social networks or reach the next levels of the game (Wallace, 2014). Similar problems arise with the use of smartphones and the consequences on cognitive abilities (Mascia et al., 2022). There are also significant negative moderating effects of smartphone addiction on the relationship between self-regulation and well-being (Mascia, Agus and Penna, 2020). Abuse of Internet technologies results in a number of changes in the subject of interaction itself, including a lack of effort that leads to a lack of arbitrary regulation. As a result, there are violations associated with difficulties in initiating and planning activities, with the implementation of the control function, with infantilization (Bovina and Dvoryanchikov, 2020b). There is certainly a need for preventive measures against cyberbullying and just informing students about the socio-cognitive

components that are increased with aggressive behavior (Mascia et al., 2021).

Leading American Internet addiction researcher Kimberly Young identifies the following types of Internet addiction (Young, 2004):

1. Computer addiction - attachment to any type of computer activity that occurs against the will of an individual. First of all, it is related to the attachment to online games, with which addicts try to fill the empty space that has formed in their lives or simply to get rid of boredom. In addition, in virtual games, it is easier to achieve superiority over others without spending the effort required in real life.

2. Addiction to internet navigation - a relentless desire to search for information on sites. In another way, it is called obsessive surfing the Internet, which means indiscriminate search for information, deprived of any purpose and meaning. One wanders around websites, social networks, reads articles, notes, comments on them one by one, and endlessly follows links (Young and De Abreu, 2010). As a result, it leads to a loss of productivity and information overload.

3. Pathological attachment to online auctions, gambling or e-shopping. According to the problem of gambling addiction on the Internet of the American Psychological Association, this addiction depends on people much more than casinos or ordinary slot machines.

4. Cyber-communication addiction - dependence on communication in social networks, chats and online games for multiple players, which leads to the replacement of real relationships with virtual ones.

5. Cybersex addiction - the urge to visit pornographic sites or talk about sexual issues in closed groups or chat rooms. According to experts, many couples divorce or are on the verge of divorce due to the tendency of one of the spouses to satisfy their sexual needs via the Internet (Young, 2008). The English The Daily Mail published a study stating that online pornography created a younger generation that could not engage during normal sexual contact. The result of the study was the conclusion that impotence is getting younger and that it is no longer a problem only for middle-aged and older men (Ministry of Truth, 2013).

Digital violence - between the virtual and the real

Digital violence has its ontological roots and origins in violence in general, so digital violence in its being does not differ at all from general violence as a characteristic of the human race (Bjelajac and Filipović, 2021). The mere question or dilemma of whether digital violence is virtual or real in practice does not make much sense. This is so, starting from one definition (Russell, 1982) of evil, which says that evil is considered to be the intentional infliction of pain on a conscious being who is able to feel pain. And since digital violence is always directed at a conscious being, and that is without a doubt only man on Earth, it does not matter whether violence is applied directly, tête-à-tête, or information and communication technologies (ICT) are used for violence. In other words, like classic violence, digital violence is always real. The victims, without exception, feel it unmistakably. In addition to being real and painful, digital violence has some other characteristics that make it more dangerous and painful than conventional violence.

In the conventional form of violence, it has a physical reality where evil occurs, the abuser is often known so the victim can seek help, can identify the perpetrator, and report them to the authorities. In virtual violence, the attack cannot happen physically because it is in virtual and not real physical space, but physical manifestations of evil appear regularly. Young people are particularly exposed to digital violence because they tend to be constantly connected to the Internet, where the number of possible abusers is much higher. The abuser can hide behind anonymity indefinitely, so he does not need physical superiority over the victim, and the victim is generally unable to seek help, nor can he hide from the perpetrator, when he cannot regularly identify what creates a circulum vitiosum in which the victim is nowhere to be found safe from virtual violence (Križić, 2017).

Although the intention of digital abusers is to inflict pain on the victim, some research shows that there are differences in the type of pain that is most often inflicted on the victim depending on the sex of the victim. If violence is used against men, it is most often a threat, and for women it is insults, mockery, calling ugly names or spreading gossip about the victim. Boys are more likely to be victims of virtual abuse, while girls are more likely to be exposed to virtual violence. In research on gender differences in exposure to and susceptibility to virtual violence, men are more often involved in virtual violence than women (Križić, 2017).

According to a report by the European Women's Lobby (HerNetRights, 2017), digital violence is often portrayed as gender-neutral in the media and awareness-raising campaigns. Apart from multiple factors that influence the occurrence of violence, the picture is gained that digital violence is neutral in the sense that it affects Internet users in the same way, regardless of their gender. While it is true that both women and men report exposure to violence, the data indicate that women and girls, unlike men, are

the most common victims of online violence. They suffer the most drastic forms of violence and are most affected by the consequences of this type of violence.

Worldwide, women are 27 times more likely to be victims of online violence. In addition to the disproportionate risk for women and men between the ages of 18 and 24 to be exposed to online violence, women are in the majority when it comes to victims of the most drastic forms of violence, such as persecution and sexual harassment. Also, the data indicate that women and girls are the main victims of the so-called "revenge" pornography that was created without the consent of all parties involved.

In addition to women and girls in general, women who express their views on the Internet (representatives of academia, politicians, women in high positions), as well as activists of organizations advocating for gender equality and women's rights are particularly exposed to digital violence.

The report indicates that online violence can be divided into two groups: verbal violence, which includes sexism and hate speech, blackmail, death threats, rape, torture; and graphic violence, which includes photographing and posting photographs without consent, threats of graphic means, and retaliation by publishing pornographic content.

The need for more thorough research on the occurrence of violence against women and girls is indicated by the data that 9 million girls in Europe had some form of digital violence by the age of 15. One in five teenagers in Europe falls victim to cyberbullying, with girls at higher risk and in 2014 87% of reported child sexual abuse photos were pictures of girls (Ileš, M., n.d.).

Results and Discussion

Although global health authorities have not included Internet Addiction Disorder (IAD) on the list of psychological disorders due to a lack of scientific consensus on whether IAD is a separate psychological disorder or a manifestation of other psychological disorders that are exacerbated or manifested on the Internet, this problem has been the subject of scientific interest for more than 20 years. The foundations of the scientific study of this phenomenon were laid by the already mentioned Kimberly Young, and on the basis of her theoretical postulates a methodology was built that is almost as a rule used in empirical research related to IAD. The oldest empirical research cited in this paper was conducted by Morahan-Martin and Schumacher in 2000 in the United States. Their research included 277 students. The diagnostic instrument, meaning the method, was a diagnostic scale of 13 questions, which included questions that were not directly related to the use of the Internet but corresponded to the psychological picture and condition of the respondents (personal problems, life function, problem response mechanisms). Finally, by interpreting the results obtained, Morahan-Martin and Schumacher came to the conclusion that 8.1% of all respondents can identify as Internet addicts (Morahan-Martin and Schumacher, 2000). A few years later, during 2004, four interesting studies of this phenomenon were published in different parts of the world. Leung conducted his research in Hong Kong, on a sample of 629 respondents aged 16 to 24, using a telephone interview method where the criteria were owning a home computer and accessing the Internet. Leung used the Kimberly Young list of eight criteria, where every respondent who was found to have at least five criteria was considered an Internet addict. Using this methodology, Leung concluded that 37.9% of all respondents could be categorized as Internet addicts (Leung, 2004). In the same year, in South Korea, a group of researchers led by H. J. Yoo conducted a study on a sample of 535 students with an average age of 11 years. Using Kimberly Young criteria, the researchers compiled a scoring scale, and depending on the answers, they assigned a certain number of points to the subjects that were collected. The thresholds set by these researchers were 80 points for the IAD, and respondents with a score between 50-79 were categorized as problematic Internet users. The results obtained show that IAD was detected in 0.9% of all respondents, while 14% of all respondents were classified as problematic Internet users (Yoo et al., 2004). The following year, 2005, another study was conducted in South Korea. A group of researchers led by K. Kim included a sample of 1,573 students aged 15 to 16, and using a variation of the Kimberly Young test with a score scale on which a score greater than 70 points indicated Internet addiction, it concluded that 1,6% of respondents were diagnosed as addicts, while 37.9% showed a predisposition to IAD (Kim et al., 2006). When we compare these two studies and take into account the time flow of one year between them, we can conclude that even with a small flow of time which practically means higher internet prevalence, and a slightly older group of respondents, we come to almost twice the prevalence of this disorder and almost three times higher propensity for IAD and what is particularly worrying, the respondents in both studies were primary and secondary school students, meaning children and adolescents. In 2004, two interesting research were published in geographically close areas that are both anthropologically and culturally close. In Norway, Johansson and Gotestam conducted a randomized

sample of 3,237 minors aged 12 to 18, using the Kimberley Young diagnostic criteria, where the presence of five of the eight criteria indicated the presence of Internet addiction. The result obtained by Johansson and Gotestam was that 1.98% of respondents could be classified as Internet addicts, of which 2.42% were male and 1.51% female (Johansson and Gotestam, 2004). In the same year in Finland, Kaltiala-Heino, Lintonen and Rimpelä, (2004) conducted a survey that was part of a national project, on a sample of 7229 minors. The diagnostic instrument was the adapted criteria for pathological gambling listed in the DSM-IV, where addiction was diagnosed in the presence of four of the seven criteria. The results showed that 1.7% of boys and 1.4% of girls can be categorized as Internet addicts.

As we can see by comparing the results of these studies, the prevalence is very similar and differs in decimal parts, while both studies indicate that males are more prone to developing Internet addiction disorders, which is an interesting topic for future research. A study published in the United States in 2006 is interesting because it approached the problem from the aspect of lack of impulse control. In that sense, the questions from the questionnaire for this telephone survey, which included 2513 adult respondents, were extrapolated from the already established diagnostic criteria for impulse control disorders, obsessivecompulsive disorder and substance abuse, to arrive at four diagnostic sets. The results indicated a 0.7% prevalence of problem Internet use, with the proviso that this study does not answer the question of whether problem Internet use is a separate disorder or a symptom of other psychopathologies (Aboujaoude et al., 2006). At the end of this review of global research, we list a study conducted in 2008 in Iran. In this study, 1968 high-school students were selected randomly through clustering, who responded to the Persian version of four measures: the Internet Addiction Test (IAT), UCLA Loneliness Scale, Rosenberg Self-Esteem Scale, and Matson Evaluation of Social Skills. Of the sample, 977 students were Internet users, who were classified into 37 Internet addicts, 304 possible Internet addicts, and 636 moderate users (Ghassemzadeh, Shahraray and Moradi, 2008). This research is particularly interesting because it also included respondents who do not use the Internet, because less than half of the total number of respondents used the Internet. When we translate these results into percentages, we come to the data that 3.78% of respondents who use the Internet are classified as Internet addicts, and that 31.1% of them are potential addicts. When we include respondents who do not use the Internet, then the prevalence is lower and amounts to 1.88% of people diagnosed with IAD in the total population of the Islamic Republic of Iran.

All this research provides an interesting historical context. Carried out in the period from 2000 to 2008, they firstly show that the problem of potential Internet addiction was scientifically approached at a time when the Internet was in the early stages of its development when it was immeasurably less accessible and widespread. On the other hand, similar results obtained in this research show that the development of a certain country and its technological capacities do not have a dominant influence on the prevalence and potential for developing Internet addiction disorders, or, to a lesser extent, problematic Internet use. However, the current phase of Internet development and proliferation, especially since mobile phones or other portable electronic devices such as tablets have become the primary means of accessing the Internet and its contents, should significantly increase the amount of time spent online in more ways than one. In the first place, ease of access and permanent connection to the Internet, and then the diversification of services and content that can be found on the Internet have brought a huge change compared to the time when the Internet was accessed from a fixed position in the household, usually desktop or laptop computers.

The research that will be presented below was performed by the authors of this paper for the second edition of the monograph "Bezbednosna kultura – umeće življenja" ("Security Culture – Art of Living") by Željko Bjelajac, which is being prepared and not yet published, and which is expected to be published in 2023. The research was conducted in the period from September 10th, 2021 to December 25th, 2021, in Belgrade, Novi Sad, Subotica, Niš, and Kragujevac. The research was conducted by the authors and associates. The type and size of the sample was a random, representative sample of 1,020 respondents of different ages and occupations, which is the frame of the sample. Sampling was performed by random sampling. The selection of respondents was done by random sampling on the day of the survey. The research technique was face-to-face, while the research instrument was a questionnaire representing the Internet addiction test by Kimberly Young. The questionnaire consisted of 20 questions, to which the respondents answered on a scale from 0 to 5, where 0 meant that the question was not applicable, 1 - rarely, 2 - occasionally, 3 - often, 4 - most often, and 5 - always. In accordance with the obtained answers, a cumulative scale was formed for each respondent, with a possible sum of points from 0-100. The score thresholds used to determine Internet addiction were 50-79 for problematic Internet use with a predisposition to addiction, while respondents who scored 80 or more were classified as Internet addicts. Respondents can be divided into four groups according to age or occupation: primary school students

(12-15 years), 221 or 21.7%, high school students (16-19 years), 284 or 27.8%, students (20-25 years), 199 or 19.5%, and employed persons (26-40 years), 316 or 31% of the total number of respondents. There were 492 or 48.2% male, and 528 or 51.8% female respondents.

By age groups, the gender structure was as follows: primary school children - 108 boys (48.9%) and 113 girls (51.1%), high school students - 136 boys (47.9%) and 148 girls (52.1%), students - 97 boys (48.7%) and 102 girls (51.3%), and employees - 151 men (47.8%) and 165 women (52.2%). The percentage representation by age categories is similar to the representation in the total sample. The obtained summary results were divided into four groups according to the total test result. A score of less than 20 was interpreted as the absence of an indicator of Internet dependence, results between 21 and 49 represent a low level of dependence, scores of 50-79 represent moderate to high levels of addiction, while scores higher than 80 represent the presence of strong Internet addiction, i.e., people who can be said to suffer from Internet addiction disorder (IAD). Of the total number of respondents, the score between 0-20 on the IAT scale had 241 respondents or 23.6%; a score between 21 and 49 had 406 respondents or 39.8%; 348 respondents, i.e., 34.1%, had a score between 50 and 79, while 25 respondents, i.e., 2.5%, had a score of over 80 points on the IAT scale. As for the thresholds we set, it should be noted that there are other studies that use the same methodology and which set the threshold for strong Internet addiction at 70 points, but we have taken the position that raising the threshold to 80 eliminates borderline cases and tightens the criteria by which we classify respondents as addicts in the interest of determining the prevalence of Internet addiction disorders and eliminating borderline cases in the final results.

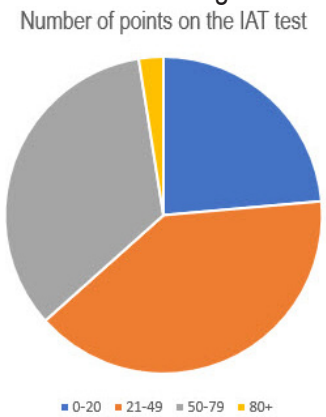

Figure 1. Survey results by the total number of points on the IAT test

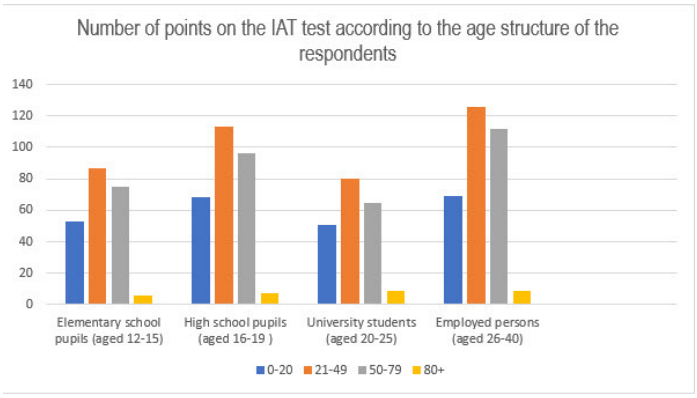

Figure 2. The results of the research presented according to the age structure of the respondents

Figure 1 shows the percentage share of four determined categories of results for the total sample of 1020 respondents, while Figure 2 shows the distribution of four determined categories of results differentiated by age group in total numbers.

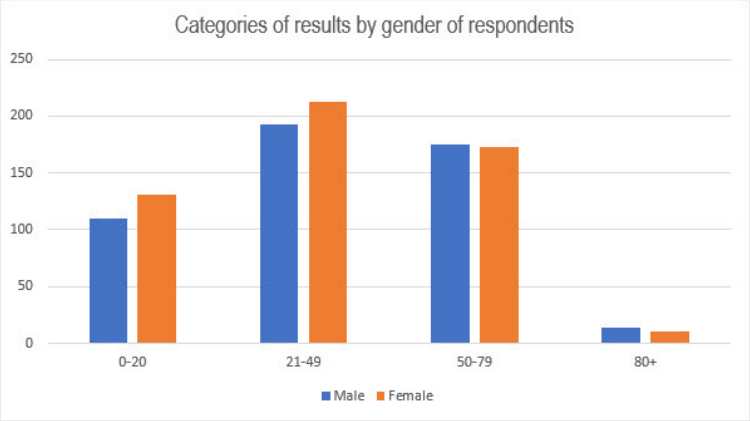

Figure 3. Distribution of result categories by gender of respondents

Figure 3 shows the distribution of categories of results in total numbers according to the gender of the respondents. In total, in the category of results from 0-20 points on the IAT scale, we have 110 male and 131 female respondents, in the category of 21-49 points we have 193 male and 213 female respondents, and in the category of 50-79 points, we have 175 male respondents and 173 females, while in the category of 80 and more points on the IAT scale we have 14 male and 11 female respondents. What is interesting is that as the total number of points among individual respondents grows, we notice a turnover in the gender structure, so from the ratio of 48.2% -51.8% in the total sample in the category of 50-79 points we have slightly more male respondents, while in the category over 80 points we have a distribution of 56% -44% in favor of male respondents. Similar trends have been observed in research by other researchers. The question that remains unanswered is why males are more prone to developing internet addiction. However, we can state that males are generally more prone to developing addictive relationships in classic addiction diseases, such as alcoholism, drug addiction, or gambling, and the results of various studies of these disorders show this. What is certainly a cause for concern is that the prevalence of Internet addiction disorders is 2.5% according to the results of our research, which would mean that there are more than 150,000 people suffering from this disorder in a country the size of Serbia, if we apply that percentage to the total. residents of the Republic of Serbia. What is even more worrying is the fact that over 34% of respondents fall into the category of moderate to high Internet addiction (50-79 points on the IAT test). Similar data were obtained from a survey conducted in Croatia in 2019 (Černja, Vejmelka and Rajter, 2019), with a slightly different methodology and scoring thresholds. The comparability of these data with data from our research, as well as data from research conducted in other countries, indicates a general trend in which one-third of the population has at least moderate Internet dependence, which is an alarming fact and a potentially great challenge for public health, with a possible domino effect on other segments of life in society.

Conclusions

We have already stated that there is no consensus in the scientific community as to whether Internet addiction disorder is a separate psychological disorder or a symptom of some other comorbidity, nor whether it should be categorized as an impulse disorder or addiction disease. What is interesting is that science recognizes the disorder of online video game play, but the Internet addiction disorder, which should be the umbrella disorder for everything that contains the word “online”, is still waiting to be included in medical theory and practice. However, regardless of different points of view and classifications, the problem of excessive or problematic use of the Internet exists, and its prevalence is not negligible. The research we presented in this paper, compared to the results of other research we included in the text, indicates a problem that has been present for more than 20 years, and with technological development and immeasurably greater availability and prevalence of the Internet, the problem can only get bigger. We should not ignore the fact that the new generation of the Internet has opened the space for the manifestation of other disorders that existed before, but gained momentum and new ways of expression on the Internet, such as various paraphilias and other psychosexual disorders, so that Internet addiction disorder should definitely be considered an umbrella disorder under which there are other disorders related either directly to the Internet, or which use the Internet to gain new ways of manifesting and satisfying

the impulses that arise from them. Physical and psychosomatic problems and disorders resulting from excessive internet use should not be neglected, especially when it comes to children and people with development. What must first be recommended are broad social activities to raise awareness of the dangers of excessive and problematic Internet use, offering healthy alternatives, promoting a culture of safe Internet use, and other self-control measures to educate individuals. The Internet will develop and expand even more, and although life without it is unthinkable today, the situation will be even more intense with further technological development and the influence of the Internet in additional pores of social and individual life, and this should be accepted in the best spirit as progress. But what must not be neglected, excluding any kind of moral panic that is not useful, is that we must constantly point out the dangers that really exist, and work permanently on this aspect of mental health of individuals, nations, and global society.

Conflict of interests

The authors declare no conflict of interest.

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